IN THE CLAIMS:

1-12. (canceled)

13. (withdrawn) A method of determining the inherent regenerative capacity of transgenic fish of claims 4, 7, 8, and 9 with respect to ablation and subsequent regeneration, or deficiency thereof, of specific targeted cells and/or tissue types comprising a targeted cellular ablation and subsequent regeneration screening procedure whereby the transgenic fish is exposed to an ablation-promoting pro-drug, whereby a cell(s) of the transgenic fish expressing a pro-drug converting moiety is contacted with the pro-drug and wherein the pro-drug is converted into a cytotoxic drug by action of the pro-drug converting moiety and whereby only the cell(s) expressing the pro-drug converting moiety are ablated by action of the drug and, whereby subsequent regeneration, or lack of regeneration, of the ablated cell(s) is detected by the general presence, or absence, of regenerating cells and/or the presence, or absence, of a cellular reporter expressed by regenerating cells, such that if regeneration is detected the fish is determined to be regeneration-competent with regards to the targeted cell(s), cell type(s), or tissue(s) and, whereas if regeneration is not detected the fish is determined to be regeneration-deficient.

14. (withdrawn) A method of determining the inherent regenerative capacity of transgenic fish of claims 4, 7, 8, and 9 with respect to ablation and subsequent regeneration, or deficiency thereof, of cells ablated regionally comprising: a regional cellular ablation and subsequent regeneration screening procedure whereby the transgenic fish is exposed to an ablation-promoting pro-drug, whereby a cell(s) of the transgenic fish expressing a pro-drug converting moiety is brought into contact with the pro-drug and wherein the pro-drug is converted into a cytotoxic drug by action of the pro-drug converting moiety and whereby the cell(s) producing the cytotoxic drug, as well as cells in the general vicinity of the cytotoxic drug producing cell, are ablated by action of the drug and, whereby subsequent regeneration, or lack of regeneration, of the ablated cell(s) is detected by the general presence, or absence, of regenerating cells and/or the presence, or absence, of a cellular reporter expressed by regenerating cells, such that if regeneration is detected the fish is determined to be regeneration-competent with regards to the regionally ablated cell(s), cell type(s), or tissue(s) and, whereas if regeneration is not detected the fish is determined to be regeneration-deficient.

15. (withdrawn) A method of identifying genes and genetic mutations affecting cellular regeneration in transgenic fish of claims 4, 7, 8, and 9 comprising creating and identifying mutant transgenic fish whereby progeny of mutagenized transgenic fish of claims 4, 7, 8, and 9 are subjected to targeted or regional cellular ablation within the context of a "forward genetics" mutagenesis screen and mutant transgenic fish are identified by an alteration in the competency or deficiency for cellular regeneration in those progeny containing the mutation(s) from mutagenized transgenic fish, such that genetic mutations are identified which alter the regenerative capacity of the fish, whereby mutations either diminish the regenerative capacity of regeneration-competent fish, or enhance the regenerative capacity of regeneration-deficient fish with respect to the ablated cell(s) or tissue types by detecting the presence or absence of regenerating cells and/or the presence or absence of a cellular reporter expressed by regenerating cells, and whereby instances of altered regenerative capacity are due to a mutation(s) that causes an alteration in gene structure, gene product structure, gene product function, and/or gene product expression, thereby identifying the altered gene and/or gene product as a factor capable of influencing the process of cellular regeneration, whereby mapping, cloning, and sequencing of the altered gene identifies a precise genetic alteration capable of influencing the function of the associated gene(s) and thereby the process of cellular regeneration.

16. (withdrawn) A method for identifying compounds which alter cellular regeneration in fish comprising a pharmacological screen where transgenic fish of claims 4, 7, 8, and 9, and mutant fish derived thereof with an altered capacity for cellular regeneration, are subjected to targeted or regional cellular ablation, and subsequently the fish are maintained in the presence of a discrete molecular compound or sets of molecular compounds, such that compounds can be identified which alter the regenerative capacity of the fish, relative to fish maintained in control conditions, whereby compounds either diminish the regenerative capacity of regeneration-competent fish, or enhance the regenerative capacity of regeneration-deficient fish with respect to the ablated cell(s) or tissue types by detecting the presence or absence of regenerating cells and/or the presence or absence of a cellular reporter expressed by regenerating cells, whereby compounds promoting an enhanced capacity for regeneration are determined to be target compounds and/or drugs capable of promoting the process of cellular regeneration and compounds promoting a

diminished capacity for regeneration are determined to be target compounds and/or drugs capable of promoting the process of cellular degeneration.

17. (withdrawn) A method in accordance with claims 13, 14, 15, and 16 where the transgenic fish is zebrafish.

18. (withdrawn) A method in accordance with claim 13, 14, 15, and 16 where the transgenic fish is medaka.

19. (new) A transgenic fish having a transgene, the transgenic fish selected from the group consisting of zebrafish and medaka, the transgene comprising:

a regulatory DNA sequence including a promoter and, optionally, an enhancer;

an ablation-promoting moiety, the regulatory DNA sequence operably linked to the ablation-promoting moiety, the ablation-promoting moiety including at least one component of a pro-drug conversion system;

wherein the ablation-promoting moiety is expressed in a reproducible expression pattern in the transgenic fish, the reproducible expression pattern is at least one of a spatial pattern and a temporal pattern.

20. (new) The transgenic fish of Claim 19 wherein the regulatory DNA sequence is a homologous regulatory DNA sequence.

21. (new) The transgenic fish of Claim 19 wherein the regulatory DNA sequence is a heterologous fish regulatory DNA sequence.

22. (new) The transgenic fish of Claim 19 wherein the regulatory DNA sequence is a heterologous regulatory DNA sequence from a species other than a fish.

23. (new) The transgenic fish of Claim 19 wherein the regulatory DNA sequence specifies a cell specific expression of the ablation-promoting moiety.

24. (new) The transgenic fish of Claim 23 wherein the cell specific expression is specific to neuronal cells.

25. (new) The transgenic fish of Claim 19 wherein the cell specific expression is specific to at least one of skeletal, cardiac, bone, and cartilaginous cells.

26. (new) The transgenic fish of Claim 19 wherein the transgene further comprises a reporter wherein the expression of the reporter is coupled to the expression of the ablation promoting moiety.

27. (new) A transgenic fish having a transgene, the transgenic fish selected from the group consisting of zebrafish and medaka, the transgene operably-linked to an endogenous regulatory DNA sequence, the transgene comprising:

a minimal promoter;

an ablation-promoting moiety, the minimal promoter operably linked to the ablation-promoting moiety, the ablation-promoting moiety including at least one component of a pro-drug conversion system;

wherein the transgene is expressed by the endogenous regulatory DNA sequence.

28. (new) The transgenic fish of Claim 27 wherein the endogenous regulatory DNA sequence specifies a cell specific expression of the ablation-promoting moiety.

30. (new) A transgenic fish having a transgene, the transgenic fish selected from the group consisting of zebrafish and medaka, the transgene comprising:

an upstream activating sequence configured to bind to a transcriptional activator;

a minimal promoter operably-linked to the upstream activating sequence;

an ablation-promoting moiety operably linked to the minimal promoter and the upstream activating sequence, the ablation-promoting moiety including at least one component of a pro-drug conversion system;

wherein the transcriptional activator regulates the expression pattern and level of the ablation-promoting moiety.

30. (new) The transgenic fish of Claim 30 wherein the transgene further comprises a reporter wherein the expression of the reporter is coupled to the expression of the ablation promoting moiety.